

THE INTERNATIONAL ATOMIC ENERGY AGENCY - ORGANIZATION,
WORK AND SERVICES IN SELECTED FIELDS

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1. INTRODUCTION

In an address to the 8th General Assembly of the United Nations (1953) the President of the United States suggested that Governments should begin to make joint contributions from their stockpiles of fissile materials to an international atomic energy agency which would be set up under the aegis of the United Nations. The fissile material so collected would be used to serve the peaceful pursuits of mankind. Experts would be mobilized to apply atomic energy to the needs of agriculture, medicine and other peaceful purposes and a special effort would be made to provide abundant electrical energy in the power-starved areas of the world.

This suggestion was taken up. A Statute which defines the structure and purpose of the International Atomic Energy Agency (IAEA) was prepared by a group of nations and approved by a conference at the United Nations Headquarters in 1956. The Statute entered into force on 29 July 1957.

The Agency's objectives, as defined in its Statute, are that it "shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, as far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose".

To attain these objectives, the IAEA is authorized "to encourage and assist research on, and development and practical application of, atomic energy for peaceful uses throughout the world; and, if requested to do so, to act as an intermediary for the purposes of securing the performance of services or the supplying of materials, equipment, or facilities by one member of the Agency for another"; to "... assemble and make available in an accessible form the [scientific] information made available to it..." and furthermore "to make provision, ... for materials, services, equipment, and facilities to meet the needs of research on, and development and practical application of, atomic energy for peaceful purposes, including the production of electric power, with due consideration for the needs of the under-developed areas of the world".

The Agency is obliged to ensure that all activities in which it takes part are exclusively directed to peaceful uses. It is also the function of the Agency to establish international health and safety standards and to apply these to its own operation and to operations in any way assisted by it.

2. THE STRUCTURE OF THE IAEA

The IAEA is an autonomous intergovernmental organization with Headquarters in Vienna, Austria. It is related to the United Nations by an agreement which recognizes it as the agency under the aegis of the United Nations responsible for international activities concerned with the peaceful uses of atomic energy (Fig. 1). It submits an annual report on its activities to the General Assembly of the United Nations and, when appropriate, to the Security Council. It retains independence with respect to its policy, programme and budget.

The IAEA consists of the Members States. There are at present 110 Member States. The Agency's organs are the General Conference, the Board of Governors and the Secretariat (Fig. 2).

THE GENERAL CONFERENCE, of all Member States, convenes once a year, in September, for a general debate on the Agency's policy and programme, to consider for approval the budget and the annual report, to consider applications for membership, to elect new members to the Board of Governors to replace those whose terms have expired and, every four years, to approve the appointment of a new Director General.

THE BOARD OF GOVERNORS, consisting at present of 34 Member States, has authority to carry out the functions of the Agency in accordance with the Statute and subject to its responsibilities to the General Conference. It meets four or five times a year to consider matters proposed to it by Member States or the Director General. It approves and submits the draft budget and the Agency's programme to the General Conference. Every fourth year it chooses a new Director General, whose appointment is then subject to approval by the General Conference.

THE SECRETARIAT, of about 480 professional and more than 800 general service staff, is headed by the Director General, who is responsible for the administration and implementation of the Agency's programme. The Director General is assisted by five Deputy Directors General, each head of a department (Administration, Research and Isotopes, Technical Assistance and Publications, Technical Operations and Safeguards).

The Director General is advised upon scientific and technical matters by a Scientific Advisory Committee of twelve distinguished scientists, whose appointments are for three year-terms.

Each Department comprises a number of Divisions, each headed by a Director. For Example:

Department of Technical Operations

- Division of Nuclear Power and Reactors
- Division of Scientific and Technical Information
- Division of Nuclear Safety and Environmental Protection

Department of Research and Isotopes

- Division of Life Sciences
- Division of Research and Laboratories
- Division of Atomic Energy in Food and Agriculture (Joint FAO/IAEA)
- Agency's Laboratories
- International Centre for Theoretical Physics, Trieste.

Most Divisions contain several Sections. For example:

Division of Nuclear Safety and Environmental Protection

- Section of Radiological Safety
- Section of Waste Management
- Section of Nuclear Safety

Division of Life Sciences

- Section of Dosimetry
- Section of Medical Applications
- Section of Radiation Biology

Division of Research and Laboratories

- Section of Physics
- Section of Chemistry
- Section of Isotope Hydrology
- Section of Industrial Applications
- Section of Nuclear Data

The Agency co-operates with the United Nations and many international organizations in the UN family. Co-operation agreements have been concluded with the following inter-governmental organizations: The Organization of African Unity, the Organization for Economic Co-operation and Development/Nuclear Energy Agency, the Organization for the Prohibition of Nuclear Weapons in Latin America and the Council of Mutual Economic Assistance (CMEA) of the socialist countries. In addition, several non-governmental organizations have consultative status with the IAEA.

3. RESOURCES

The Agency's work is financed from different sources:

- Annual and voluntary contributions from Member States;
- Donations in kind;
- Funds allotted under components of other UN programmes (UNDP, UNEP).

For example the budget for 1975 from all of these resources was 38 million dollars and the estimate for 1976 was 44 million dollars. The overwhelming majority of the resources comes from the assessed annual contributions of Member States, approximately 70 - 80%.

4. SELECTED FIELDS OF ACTIVITY

When the IAEA was founded, the intention was that it could supply and control nuclear materials, which were expected to be scarce, and promote the use of nuclear power, which was expected to become cheaper than conventional power at a fairly early date. It became apparent, however, that nuclear raw materials are more plentiful than expected and that competitive power sources have become cheaper. The production of nuclear power therefore lost some of its urgency at that time and other aspects of nuclear programmes assumed greater importance, such as the use of radioactive isotopes and radiation in medicine, agriculture and industry.

In recent years, however, the global energy situation has changed profoundly. It is also understood that no new technological breakthrough can have an immediate impact upon the situation. Nuclear power represents for the next ten years - the only alternative technologically well enough advanced to add significant amounts of new energy to the energy budget.

For the world as a whole the indicated ranges of nuclear power capacity are of the order of 200,000MW(e) for 1980, 900,000MW(e) for 1990 and 1,300,000MW(e) for the year 2000. The share of nuclear power which is today less than 10% of electricity and less than 3% of primary energy will grow to some 35% of electrical energy and 15% of primary energy by the turn of the century. At present 187 power reactors are operating in 19 countries generating some 80,000MW(e).

The rapid growth of nuclear power projected both in industrialized and developing Member States has led to a re-evaluation of the role the Agency should play pursuant to its statutory obligation in the area of nuclear power plant planning, projection, installation, operation and not at least, safety.

4.1 Nuclear Safety and Environmental Protection

Exchange of information is effected mainly through the organization of symposia, seminars, advisory group meetings and the issuing of miscellaneous publications. The catalogue of publications is freely available. It is up-dated regularly. Regional seminars are held to reveal special problems of the region connected with radiological safety and environmental protection. Such seminars were held in Turkey (1972), Hungary (1973), Peru (1973), Indonesia (1974) and Italy (1975).

Standards and Recommendations

The Agency is authorized by its Statute to establish safety standards. These are mandatory for its own work and for work in Member States to which the Agency supplies substantial assistance; they are also recommended as a basis for the regulations of Member States. These standards consist of basic safety standards, specialized regulations, codes of practice covering various aspects of the safe handling of radioactive materials, the management of radioactive wastes and the design and safe operation of nuclear facilities. They are all approved by the Board of Governors and are published in the Safety Series. Recommendations and guidance on various topics are also issued in the Technical Report Series.

A manual of guidance in three parts was jointly prepared with WHO and ILO on radiation protection in hospitals and general medicine.

Technical Assistance

The assistance can include the provision of experts, equipment and supplies and the assignment of visiting professors; fellowships for periods of up to one year; scientific visits and research fellowships; regional and inter-regional training courses; study tours to institutions in advanced countries.

Research Contracts

Research contracts are awarded to individual institutes in Member States on such topics as radiation protection, and environmental studies. Co-ordinated research programmes are organized. Such a programme normally comprises research contracts, individually amounting to a few thousand dollars per year, awarded to institutes in developing countries,

and research agreements, involving no costs to the Agency, concluded with institutes in developed countries. In addition, meetings are usually arranged when required at which the principal investigators can discuss the programme and coordinate its future development. The costs of such coordination meetings are normally borne by the Agency.

Advisory and field services

Advice and assistance on specific problems submitted to the Agency can be given either by correspondence or by visits of staff members or specially recruited consultants. Specialized services can be provided on the siting and safety evaluation of reactor installations and the safety review of proposed shipments or irradiated fuel.

The Agency is also prepared to act as an intermediary in securing emergency assistance in the event of a radiation accident and to send staff members to the site of an accident.

A postal service is operated in which dosimeters are sent to institutes in Member States for intercomparison of the radiation fields used in standardizing personnel dosimeters for radiation protection measurements.

The full range of services provided by the Agency, and the procedures to be followed in requesting the services are described in the booklet entitled, "IAEA Services and Assistance".

The IAEA is now developing a complete set of safety codes and guides that will represent recommendations for the safety of thermal neutron power plants. The safety codes outline the minimum requirements for achieving this safety, and the safety guides set forth the criteria, procedures and methods to implement the safety codes. The whole programme is directed towards the five areas of Governmental Organization, Siting, Design, Operation and Quality Assurance. The Agency is advised in this programme by a Senior Advisory Group. The first five codes have already been completed. About ten to twelve safety guides will be ready in the course of 1977; the work will proceed then at the rate of about twelve safety guides a year, in the following years.

Due to the growing development of nuclear power programmes the transport of nuclear material, including

irradiated fuel is likely to increase markedly. Therefore great efforts have been made to set international regulations for the safe transport of radioactive materials. The Agency's regulations have been adopted by almost every international transport organization and by many individual Member States. They now form the basis of regulatory requirements for the transport of radioactive materials on land, on water and in the air, throughout the world.

4.2 Food and Agriculture

The programme aims at employing nuclear techniques to improve agricultural productivity and the quality of the produce, as well as to protect crops, livestock and food from pests, disease and spoilage.

4.3 Life Sciences

This programme covers topics in medical applications of radioisotopes, radiation biology and dosimetry.

4.4 Nuclear Power and Reactors

The objective is to provide integrated assistance to Member States in the planning and implementation of nuclear power programmes for electricity generation and other purposes by:

- a) Assisting them directly through the technical and economic assessment of programmes, the execution of reactor projects and the supply of nuclear materials;
- b) Collecting and disseminating evaluated and systematized information on nuclear power programme requirements and on proven and newer nuclear technologies;
- c) Assessing the future role of nuclear power in meeting world energy demands within the constraints imposed by environmental factors and the availability of financial resources.

4.5 Information and Technical Services

The objective is to foster the exchange of scientific and technical information on peaceful uses of atomic energy. This objective is pursued by assembling and disseminating such information to Member States, international organizations, etc. This is done mainly through the International Nuclear

Information System (INIS) and two scientific journals - Atomic Energy Review and Nuclear Fusion.

The International Nuclear Information System can provide up-to-date data for scientists, administrative officials and regulatory bodies. Its publication is the INIS Atomindex - a computer-produced bibliography, issued twice a month by the IAEA - is one of the products of the International Nuclear Information System (INIS), a co-operative world-wide programme to collect information on nuclear science and technology.

The list contains bibliographic descriptions and subject index terms for all items reported to INIS, i.e. books, research reports, journal articles, conference papers, etc. The references are grouped by subject categories and listed alphabetically by author within each category. Each issue includes a personal author index, a report number index, and index of corporate entries and a subject index. Cumulative indexes will be published semi-annually. Subject scope: physical sciences, chemistry, materials and earth sciences, life sciences, isotopes, isotope and radiation applications, engineering and technology, other aspects of nuclear energy. The references are in English. Transliterated original language titles are also given.

4.6 Safeguards

One of the Agency's main functions is to apply safeguards to ensure that nuclear materials and equipment intended for peaceful use are not diverted to military purposes. Under the Agency's safeguards system a country must accept safeguards in respect of any project with which the IAEA is directly associated - for instance by providing the nuclear fuel. The States party to a bilateral co-operation agreement for the peaceful uses of atomic energy may also conclude an agreement with the IAEA to apply safeguards in one or both countries, and States may also unilaterally submit facilities or nuclear material to IAEA safeguards. Thus Mexico, in 1968, became the first country to request safeguards on all its nuclear activities under the terms of the "Tlatelolco Treaty", which seeks to create a nuclear-weapon-free zone in Latin America.

The entry into force in March 1970 of the Treaty on the Non-Proliferation of Nuclear Weapons required the "Non-nuclear-weapon" States party to the Treaty to conclude

safeguards agreements with the Agency covering all nuclear materials in all their peaceful nuclear activities. A hundred such States are at present party to the Treaty.

The IAEA safeguards system as it has been developed over the years, and as it now applies in connection with NPT, is primarily based on nuclear material accountancy, with containment (a physical barrier, vessel, lock, seal etc.) and surveillance (both instrumental and human observation) as "important complementary measures". The system includes four main steps. Firstly, IAEA experts examine the design characteristics of a nation's existing nuclear plants and of new plants in the planning stage, to check that the design permits effective controls. Secondly, the State is required to keep detailed records of plant operations as well as records on flow and inventory of nuclear materials. Thirdly, the Government of the country concerned supplies periodic reports to the Agency based on those records. Fourthly, the Agency sends inspectors for on-the-spot checks in the nuclear plants; the inspectors for each country are designated with the consent of that country. Increasing attention is being given to the use of instruments for surveillance and measurements, which reduce the manpower required for effective safeguarding. The accurate assessment and correlation of information obtained enables the Agency to detect loss - which may be accidental - or diversion of nuclear material. Safeguards are applied in such a way that industrial secrets are protected and there is no interference with the operation of plants. For the first time in history, an internationally recognised and accepted safeguards system has been established.

MAIN REFERENCES FROM IAEA PUBLICATIONS

- The Agency's Programme for 1975-80.
- IAEA Services and Assistance, 1974.
- International Conference on Nuclear Power and Its Fuel Cycle, 1977.
- Power Reactors in Member States, 1976.

ORGANIZATION OF THE UNITED NATIONS FAMILY

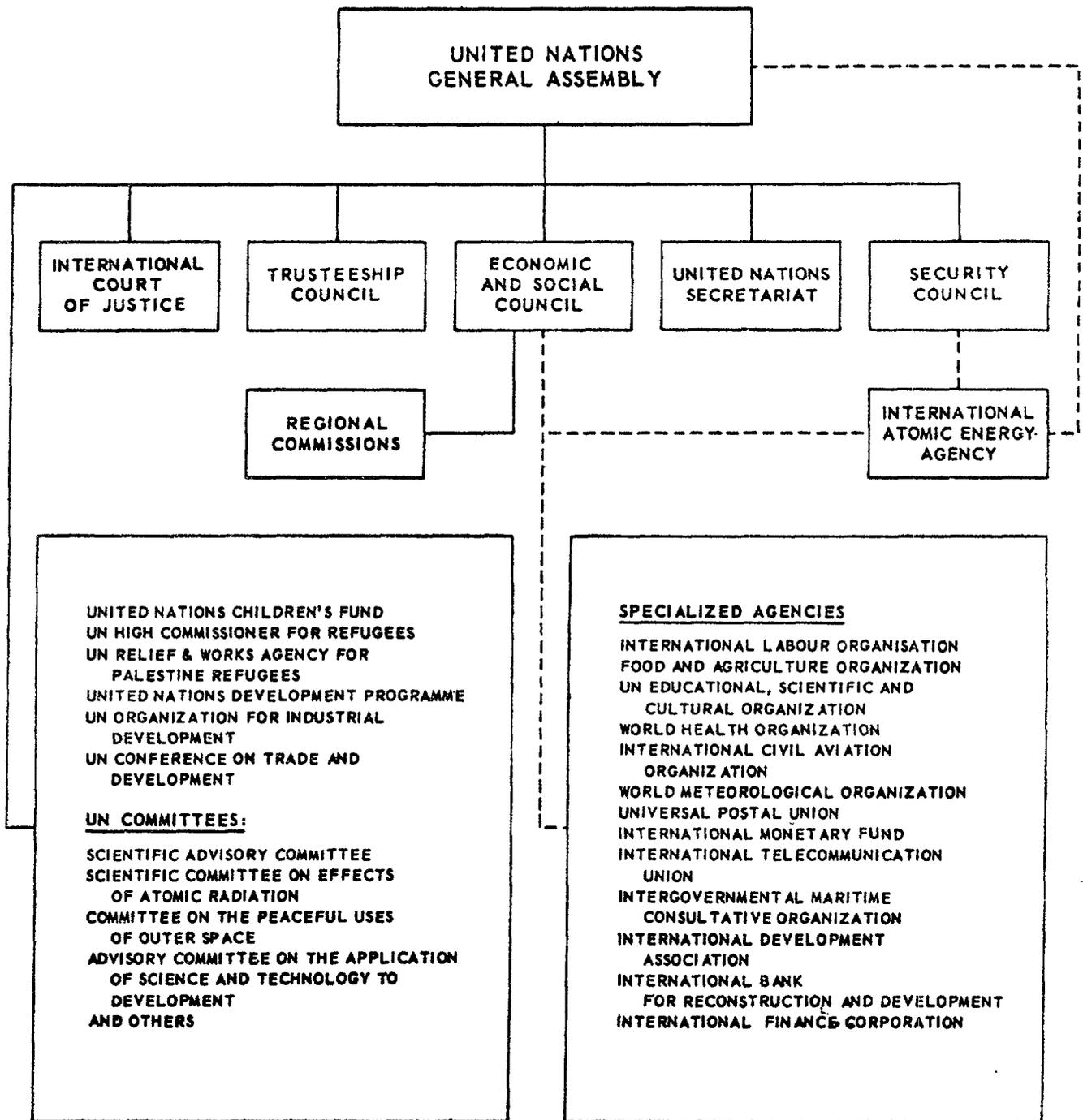


Fig. 1. Organization of the United Nations Family.

INTERNATIONAL ATOMIC ENERGY AGENCY

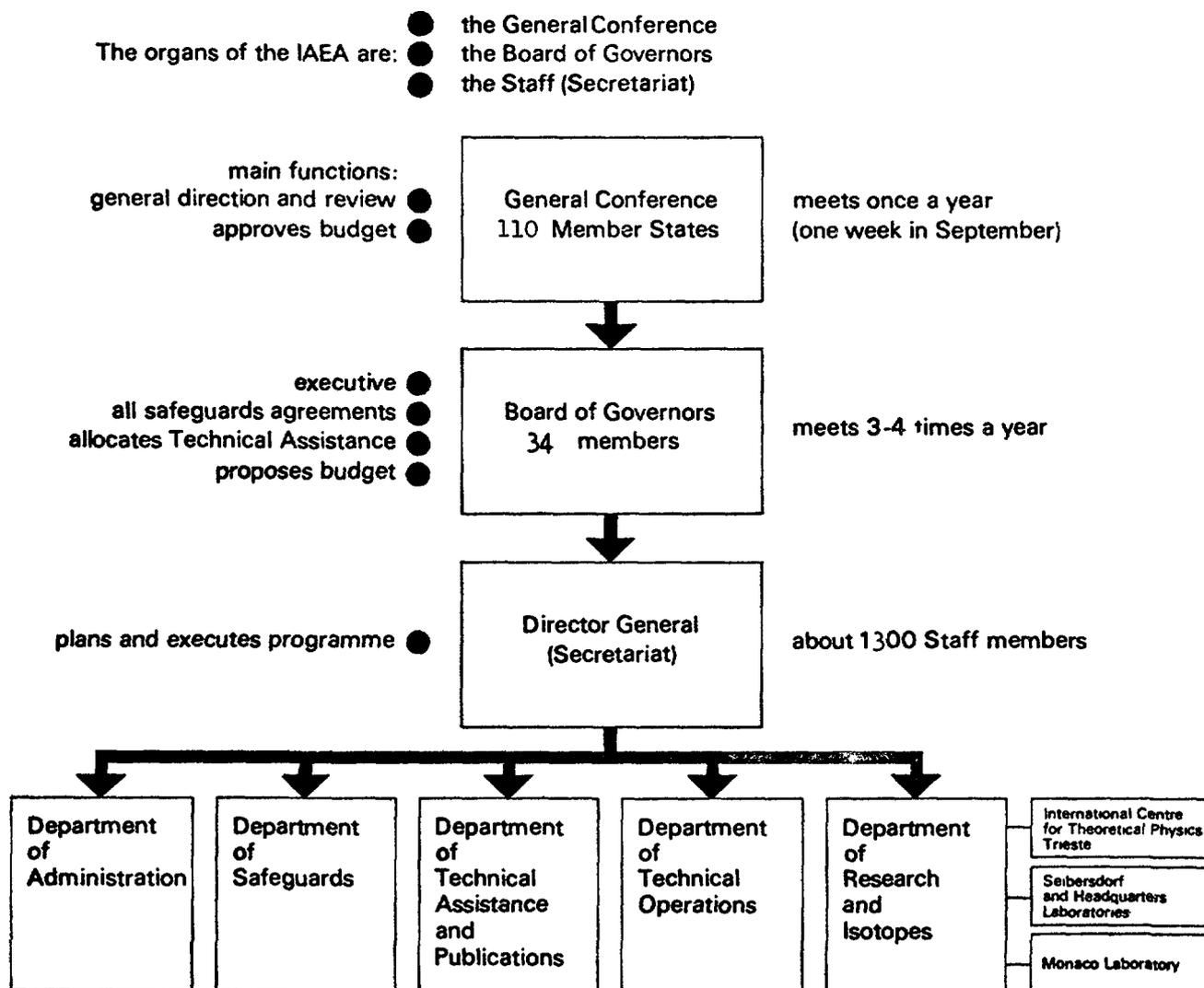


Fig.2. Structure of the International Atomic Energy Agency